

**altuit**<sup>™</sup>

# The 5Ds

*A Design-Centered Approach to  
Rapid Product Development*

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## Altuit: The 5Ds

A Design-Centered Approach to  
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# Table of Contents

<b>About Altuit</b>	<b>1</b>
<b>Introduction</b>	<b>2</b>
The 80/20 Rule	3
The Problems with traditional Customer Journey, UX and UI Design	4
What exactly is The Customer Journey and why is it important for product development?	4
So what exactly is UX and UI Design and why is it important for application development?	5
Waterfall Development Methodology	6
Agile Development Methodology	7
<b>The Altuit 5Ds Hybrid Methodology</b>	<b>9</b>
D1: Define	9
About Timing and Deliverables	10
D2: Discover	10
User Experience	10
Semantic Inquiry, Design Audit and Mood Boards	11
Technology Audit	11
Service and Documentation	11
D3: Design	11
D4: Develop	12
Software Development	12
D5: Deploy	13
Software	13
Hardware	14

## Altuit: The 5Ds

A Design-Centered Approach to  
Rapid Product Development



# About Altuit

Altuit is a new kind of design firm. One which specializes in using a structured design-centered approach to rapidly develop new products and applications. Our tested 5D methodology allows us to engage projects using perfectly matched-to-task resources. Our team has decades of experience, working together creating solutions and solving both large and small design problems. Unlike many brick and mortar firms, we have no interns, first-year designers, or 'junior' team members. We don't burden our clients with having to support expensive overheads focused on 'billable usage percent' of our staff.

And most importantly, using the 5D approach, we tell you exactly what deliverables you will receive and when.

By working with experienced and professionals, we can cut weeks and sometimes months off of development schedules while still maintaining superb quality design. Our focus is your product. Our mission is success for your clients. The purpose of this document is to learn more about how our proprietary 5D methodology works.

## Introduction

Our team, having created best-in-class software solutions and award-winning product designs, has worked in the design industry for over 25 years. We have successfully deployed hundreds of solutions as large as full scale Lunar Base prototypes for NASA and as small as time management apps for iPhone and Android.

We have created and refined our design approach which is common to both hardware and software, to bring new products to market.

This is important as now more than ever, both hardware and software are being designed together, and an optimization of this process provides a consistent and integrated solution delivered in a less resource intensive way. This means faster to market with a better solution.

One of the ongoing challenges in product and software application development, is how to work with companies to shorten development cycles while ensuring a high quality final product.

Critical to knowing what works, is also understanding what doesn't work. We continually refine our process while staying focused and committed to quality and on-time/on-budget delivery. This

## Altuit: The 5Ds

A Design-Centered Approach to  
Rapid Product Development



is demonstrated by the many successful products we've delighted our customers and their end-users with over the years.

Key tenants for expediting development include maximizing the efforts of discovery design time – *Just in Time Customer Experiences* and minimizing the cycling of technology development hurdles– *Get it right the first time*.

Before we start discussing Altuit's 5Ds, we will need to go over some industry definitions and processes.

## The 80/20 Rule

Any discussion on optimizing a process for rapid delivery needs to focus on what, where and how much to trim the steps in it.

This optimization process is unique for every project, but there are some overall process tools we typically use to guide our decision-making with regard to defining the steps.

One solution which we embrace at most every step in the process, is the concept of the 80/20 rule. This rule is grounded on the idea that for most tasks, you can achieve 80% of the results with 20% of the resources without sacrificing much, if any, quality. This only holds true using seasoned teams with specific domain knowledge and scoped project experiences.

Though there are times where the 80/20 rule isn't efficient, we continue to socialize this notion among team members as many times it eventually allows for demonstrated and significant efficiencies. All team members are aware of the 80/20 rule and are encouraged to explore how it can be applied to a workflow or pipeline. It's especially important to consider 80/20 for repetitive tasks, as even a minor saving in defining the steps of a repetitive task and workflow can yield major savings in resources.

Our clients and their stakeholders understand the concept of opportunity cost. We all know the longer a project takes to deliver a version 1 production product, the larger the chance there is of it failing or being cancelled. And in this day and age of 'Internet time,' the cost of a failing product is more than just money, it's the lost opportunity for:

- providing the benefits of the product for the customers and users.
- establishing a leadership position in the marketplace.
- creating a budget win and generating revenue for the company.

This is one reason why we believe many engagements warrant building a Maximum Valuable Product (MVP) which allows customers to take less risk, deliver solutions more quickly, receive real feedback faster and iterate to a more and better product through next gen updates.

## The Problems with traditional Customer Journey, UX and UI Design

While there have been numerous theories, books, manuals, lectures and blog posts talking about the many techniques on how to execute The Customer Journey analysis, UX (User Experience) and UI (User Interaction) Design, little is said about how to speed up the process for rapid application development.

“The Customer Journey” is defined as a chronological mapping of the steps and associated key moments an end-user (or users) take when interfacing with a new product. While effective in concept, many times this process becomes a project unto it’s own, and can end up taking significant resources while delivering predictable results.

UX is very new and still learning how to be soft science. Many colleges and universities disagree on even what it means and how to teach it. Some think it belongs in design school, others in instructional technology and information architecture, while others think it should be it’s own unique program.

It can be said there are as many ways to accomplish UX as there are timeframes and budgets. UX is clearly one of those tasks which can fill up whatever space is available, and because of this there are plenty of dissatisfied clients with stories of poor return regarding cost versus value where UX is concerned. One thing is known: UX has never designed a final product. It is only one of many inputs into the process of creating a best-in-class product. Our design-centered approach to UX is a great way to provide an 80/20 solution and expedite the overall delivery of final deliverables, all without sacrificing the quality of the final product.

## What exactly is The Customer Journey and why is it important for product development?

As previously mentioned, the Customer Journey is a chronological walkthrough documenting the experience of any potential customer of a product or service. It is typically discovered through the steps of:

- Awareness. How the customer came to learn about the existence of a product.

## Altuit: The 5Ds

A Design-Centered Approach to  
Rapid Product Development



- Consideration. What are the factors which help make the customer decide to use the product.
- Engage. How does the customer acquire the product?
- Experience. What are the significant moments which make up the customer use experience for the product.
- Support. How does the customer receive support for the product?
- Extend. What is the product road map? How does it get updates? How do existing users help grow the installed base?

The goal of The Customer Journey is to try and help define “moments” of opportunity and potentially define an “ecosystem” of hardware and/or software collaborative design concepts. It can sometimes be extended to large scale business strategy issues, such as marketing and branding.

## So what exactly is UX and UI Design and why is it important for application development?

UX Design, as it pertains to application development, is mostly accomplished by information architects and instructional technology professionals, with little to no training in UI. Generally, UX focuses on defining end-user profiles and business requirements based on research, interviews, tests, and it pays careful attention to the different required roles and use cases for each user.

UX Design, as it pertains to hardware focuses on ergonomics and human factors for the product. Is it comfortable to use? Are the interface controls in the correct place? How is it held or moved? These and more questions are typically asked early on in the design cycle.

This is accomplished by creating specifications in the form of User Profiles, Use Case studies, and in some cases, Business Requirements Documentation (BRDs). Many times customers are involved in “Participatory Design” groups, asking them to design workflows using flashcards, physical components or software building-block construction kits. We have found most of these approaches less than valuable as customers rarely understand how to design products and even less how to design apps. It’s better to just interview them regarding their needs– not how to implement them. While there is still something to be learned by working through these exercises, it’s important to weigh the time to market and resource implications of lengthy UX endeavors against the end results.

UX design also may have workflow documentation and sometimes even rough wireframes depicting interfaces. Sometimes, UX professionals use an iterative exercise, testing crude mockups with users for critical feedback. We do not believe in the value of this approach as users

## Altuit: The 5Ds

A Design-Centered Approach to  
Rapid Product Development



find it quite difficult to clearly understand crude wireframe mockups as they do not represent familiar and finished designs. A better approach is to identify user and workflow pain points without asking the users for proposed solutions.

UI Designers create wireframes and their derivative GUI (Graphic User Interface) designs. These are full fidelity raster image representations defining the look and feel for the final product. Using these high fidelity mockups, it makes much better sense to iterate the design through prototypes and end-user reviews, as the final design communicates much better than rough wireframes, and the resulting test data is much more valuable.

Sometimes on larger projects, these two endeavors, UX and UI Design, can sometimes take months and hundreds of thousands of dollars to finally resolve a proposed product or application interface. While eventually specified, the product is not yet tested or developed, which takes further resources. Clearly, this approach does not follow the 80/20 rule and we believe should be streamlined. We'll address how we approach this later.

## Waterfall Development Methodology

To understand our 5D process, it's also helpful to understand other methodologies.

The Waterfall development process is hallmarked by its ability to scope and schedule large projects for on-budget and on-time delivery.

Typically in waterfall, there is an expectation to *get it 100% right* including all features at all costs' with the notion there are scheduled maintenance updates to catch anything not fully correct.

This feature-rich focus came about in the day where incremental changes to production applications were difficult if not impossible to roll out. Or, in the case of shrink-wrapped software and physical products, incomplete or feature sparse software created significant consequences for companies who would sometimes have to recall their product or patch it– all at great cost.

For software, Internet updates are now the standard, and in many cases, even OS'es are updated in the background with little to no user awareness. Internet apps running inside a browser window are routinely updated at the server with zero notice to users. In these instances, judicious use of the 80/20 can carve significant time off of project delivery versus the traditional waterfall methodologies.

And this is also true for many hardware based products which have screen based user interfaces. Now many of the knobs and controls have been virtualized within the touchscreen.

## Altuit: The 5Ds

A Design-Centered Approach to  
Rapid Product Development



Projects running in an industry standard MVP model (Minimum Viable Product) have many advantages. They cost less, are delivered more quickly, work with real data in real circumstances, and can provide realtime feedback. Just about all the success storied Internet businesses started this way. So have many Kickstarter hardware projects. Of course, MVP is not the answer for all products, but is worth considering. Of note, we tend to refer to MVP as **Maximum Value Product** which instead focuses on what actually is needed to produce an impactful experience for customers which our partners are eager to go to market with.

With a Waterfall approach, results are achieved using rigid specification processes at the beginning of projects. Many times, these specifications come in the form of Business Requirements Documents (BRDs). These highly repetitive and mostly text-based documents are intended to try and fully (laboriously) document the whole of the interface and user experience for each use case. It is not uncommon for a Waterfall project to have over 1000 pages of BRDs and other specifications before it even begins, defining every user interaction, every use case, and plot all of this using GANTT and PERT charts defining how every hour in every day for every team member will be spent over the next number of months and years.

Of course, as soon as the project is started, many changes are made mid-course as no spec can be so perfect as to accurately define such large projects and their use cases so accurately. PMs (Project Managers) use Engineering Change Notices (ECNs) to document such mid-course re-directions. When the re-directions become massive, the project either fails, or crumbles under the pressure of the original specification.

Furthermore, stakeholders are generally not involved in many of the trade-offs and course corrections. This leads to unmatched expectations regarding final deliverables. The resulting solutions are unfamiliar to users and stakeholders.

It is for these reasons, Waterfall has a reputation as a very resource hungry and time-consuming process with a high failure rate. Most contemporary development teams no longer pursue strict waterfall methodologies.

## Agile Development Methodology

The Agile methodology arose because of the severe underperforming nature of Waterfall. Managers and stakeholders wanted more control, and developers needed better and more timely specification. In a nutshell, Agile focuses around “User Stories” and “Agile Sprints” where specific case studies “Epics” are created and smaller teams attempt to iterate to a solution, week after week (Sprints), until a suitable solution is developed.



## **Altuit: The 5Ds**

A Design-Centered Approach to  
Rapid Product Development



Another concept of Agile is the notion it is a continuous process, with new product builds and releases scheduled regularly. After the first production deploy of a software or hardware solution, many project teams stay engaged and continue to develop and improve the product as part of a scheduled maintenance mode.

This approach allows for “Just In Time” definition of features and functions for a project, thus enabling a faster track to final solutions. Typically, Agile projects start much faster as they don’t need elaborate 1000 page specifications.

Unfortunately, with Agile, there is much less focus on schedule and budget. Teams focus on results. Sprints and Epics are sometimes time-boxed in order to control resource allocation.

Typically, Agile teams are comprised of UX/UI Designers, Industrial Designers, Project Managers, Developers, Engineers and Stakeholders.

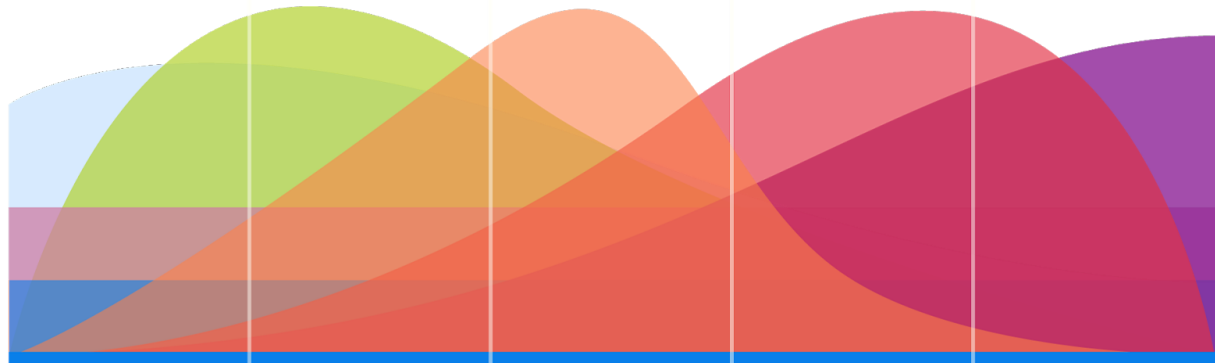
The biggest problem with Agile is it’s inability to guarantee a result, a timeframe or budget. This makes it almost impossible for a service type organization to operate exclusively using an Agile Methodology.

A side issue regarding the Agile methodology, is its insistence on interdisciplinary functional prototypes. These can be time consuming for multiple team members and therefore expensive to build. Iterating in this way can also be frustrating for all.

So, the question becomes: How to solve these problems and expedite this whole process, all while hitting budget and timeline targets?



# The **5D** Design Process



**D1**

**Define**

Deliver Proposal,  
RFQ and/or SOW

**D2**

**Discover**

Deliver Discovery  
Audit and Product  
Feature Spec

**D3**

**Design**

Deliver Final Design  
Spec and Test Plan

**D4**

**Develop**

Deliver Unit Tested  
Product or  
Application ready  
for Testing

**D5**

**Deploy**

Deliver Final  
Application

## The Altuit 5Ds Hybrid Methodology

By combining the best parts of both Waterfall and Agile methodologies, our production system is created to be flexible enough to respond to user requirements, and disciplined enough to be able to meet target budgets and timeframes– all with the goal of creating great products in a rapid development environment.

Here’s how it’s done.

### D1: Define

The Define stage, or ‘D1’ as we call it, focuses on transferring enough project knowledge to our team, so we can accurately scope all that needs to be done for the given project or projects.

## Altuit: The 5Ds

A Design-Centered Approach to  
Rapid Product Development



Most of the time this is accomplished by having several meetings with the client to extract the necessary information regarding product functions, high-level workflows, business and end-user requirements and overall product strategy goals. Typically a straw man Customer Journey is discussed, as are keys to success for the project. Once this information is collected, we can then provide a roadmap to completion, including technology hurdles, workflow diagrams, gap analysis, required team expertise, timeframes, technology strategies, resources and budgets. Many times, a cognitive vision component is also included which can be used to provide a project beacon, as well as help explain the product to other corporate and investor stakeholders..

We try and exclude BRDs or lengthy specs from this D1 phase, and instead focus on understanding (and documenting) some of the high-level workflows necessary for successful product or application execution. These workflows are created using our own proprietary diagramming software system which creates easy to follow graphic flowcharts which help to socialize to all team members and stakeholders the problems to be solved.

From these workflows, we can then begin to describe the functional requirements, subsystems, components and managers of the overall build architecture. This set of diagrams and relationships we call 'architecture diagrams' and 'data workflows.' From these we can begin to build our timelines, milestones and budgets– all in a 30,000 foot view which is easy to understand and discuss.

## About Timing and Deliverables

Generally, the D1 phase represents a quick and easy step for our teams and our clients with the goal being able to validate the customer and project needs, and provide a scoping mechanism for creating the final deliverables. The resulting deliverables are in themselves tell a valuable story for the client.

## D2: Discover

The Discover phase focuses on deep dive research into understanding and documenting the exact project requirements and customer needs.

There are a number of distinct discoveries and audits depending on the nature of the project.

## User Experience

As mentioned previously, we try and bypass lengthy specs or BRDs. These take months to develop and are out-of-date as soon as the first ECN is recorded. Plus, consuming them in mass

## Altuit: The 5Ds

A Design-Centered Approach to  
Rapid Product Development



takes huge resources from the whole development team. Typical ramp up times can be a month or longer just to get through the spec and all the BRDs.

We instead change the focus to detailed ergonomics drawings, workflow diagrams, component configurations and rough wireframes. We do quick interviews and further refine quick end-user profiles and role definitions to complete the customer journey, focusing on any opportunities which may lead to creative design moments. Top level user role workflows also document some of the major use cases and can lead to team discussions where problems and issues can be resolved in quickly generated sketches and wireframes– and sometimes, rapid 3D prototypes and GUI comps. The goal is to time box this part of the process so as not to over-index on the details. That part comes later.

## Semantic Inquiry, Design Audit and Mood Boards

In order to create the best and correct end-user experience, it is often necessary to work with marketing and other stakeholder groups to better understand how they wish their brand to be perceived. We use Semantic Inquiry and Design Audit meetings to help us better understand the corporate culture, design likes and dislikes and overall brand reality. These are typically documented in Mood Boards which are used to illustrate our interpretation of the client inquiry.

## Technology Audit

Also, during this phase, we work in detail with in-house technical departments to understand integration issues and identify any difficult technical lifts, called “Wicked Problems,” which may need to be isolated and tested.

## Service and Documentation

While requirements for service and documentation may have been scoped in the D1 phase, the teams need to be identified and socialized with each other so they know what form deliverables should be and when to expect them.

## D3: Design

The Design phase is the most agile or iterative of all phases. Typically, we start by turning component configurations and workflow diagrams into sets of high fidelity wireframes and/or 3D computer sketches and 3D models. We go over these in detail with the client and stakeholders, but NOT end-users.

## Altuit: The 5Ds

A Design-Centered Approach to  
Rapid Product Development



Why not show wireframes or 3D sketch models to end-users? There are a number of problems encountered using wireframes as click-thru prototypes. Because the wireframes use the highest contrast of color (black and white), detail emphasis is created at the edges of interface elements thus generating a very visually noisy interface which does not read by users as a full fidelity interface, which is intended. This of course is not a desired outcome and confuses users and testers alike. Similarly, the same is true for 3D sketches, they may look too technical and are not the best tools to communicate a product design to prospective users.

We iterate over and over again on high fidelity wireframes and 3D sketches until everyone is satisfied we have a superb solution, or we run out of time and resources.

Once wireframes and 3D designs are agreed upon, we then create final Graphic User Interfaces and/or 3D renders and/or models. These are continually refined until a specified documentation packet is available. We tend to document software assets and interface in a variety of different prototyping tools. Product designs are documented in industry standard NURBS datasets.

With regard to software, most helpful in this process are hybrid UX/UI Designers. These are folks who can read and understand the UX profiles, use cases and user needs analyses, and can also create final production ready look-and-feel GUI designs. Their job is to interpret the requirements, and quickly generate either wireframes, or in some cases, fully realized GUIs which are then reviewed and processed by the teams. Here is where our teams are most Agile, continuing to refine and redesign until the GUI meets the team's goals, or a time-box limit is reached.

These rare individuals are able to compress this phase significantly– literally from months to weeks, and from weeks to days.

## D4: Develop

This phase varies depending on whether software, hardware or connected device.

### Software Development

For browser based, AR, VR and MR apps, development can be broken down into 4 distinct functions:

Interface developers take Photoshop (or other) artwork and slice it up and code it to work in Unity, a web browser or other platform. These developers work closely with the designers to make sure the interface elements are just right and animation effects are exact.

## Altuit: The 5Ds

A Design-Centered Approach to  
Rapid Product Development



Client-side developers are responsible for creating a working UI from the sliced up content. Many times some refactoring takes place in order to maximize coding for either a mid-tier layer, or direct connects to the server. These developers can use existing components, or write their own.

Mid-tier developers work to create a business layer which integrates with other customer services or APIs.

Server side developers create database schema and implement necessary server business logic. Depending on the project, full deployment to cloud based data storage may also be required.

Our developers are considered “full stack,” in that they can work with various client-side frameworks, as well as architect and develop mid-tier and server-side software.

While due to it’s nature, and the fact there are static deliverables, it’s easier for us to waterfall this phase, though we do use many agile management strategies, including epics and sprints and daily stand-ups to manage development to completion. Often development strands are staggered to work in sync with a design phase in order to provide an even more expedited progress.

Depending on the group, the number, frequency and documentation of unit and functional testing varies. Typically it is dependent upon the lead engineer, schedule, producer and client.

Final test plans are created and delivered. Also, many times user documentation is started during this phase.

## D5: Deploy

### Software

Once a project goes into it’s alpha deliverable phase, it’s considered to be in D5: Deploy phase. At this time the focus is on finding, tracking and resolving bugs, providing final documentation and tracking through alpha, beta, gamma, release candidate and production versions of the application.

While this is not a fully complete picture of everything done during the 5D process, it provides a good road map of how Altuit uses our disciplined new product development process to help provide best-in-class results for their clients.

## **Altuit: The 5Ds**

A Design-Centered Approach to  
Rapid Product Development



## Hardware

We have contacts in Japan and China for providing manufacturing liaison. We also have experience working with Sanmina and other US based manufacturing partners.